

## Prevalence, predictors, psychological correlates of internet addiction among college students in India: a comprehensive study

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### ABSTRACT

**Objective:** In the era of information technology, internet use is inevitable for mankind. Internet use shows its negative impact when it becomes excessive. The present study intended to determine the prevalence, predictors, psychological correlates of internet addiction (IA) among college students of India. **Methods:** This study aimed to synthesize findings by assessing the prevalence of IA, psychological correlates of IA and predictors of IA in a large sample of the college students of India. An extensive survey of a randomly selected sample of 1600 college students was conducted during January 2016-April 2017. Internet Addiction Test, Beck Depression Inventory, Beck Anxiety Inventory and Barratt Impulsivity Scale were employed to collect related data. **Results:** A comparison of the clinical characteristics of the Internet addict (IAD) and Non Internet addict (N-IAD) groups showed that the score on IA, depression, anxiety and impulsivity were significantly higher in the IAD than in the N-IAD group. **Discussion:** An extensive survey on a large sample of college students yielded a prevalence of 12.5% in India. The measures of depression, anxiety and impulsivity are significantly correlated to IAD than N-IAD group. This study revealed that risk associated with internet overuse has already become severe hence, implementation of early detection and prevention measures is requisite of mental health professionals in the country. (*Anatolian Journal of Psychiatry* 2020; 21(2):117-123)

**Keywords:** internet addiction, prevalence, psychological correlates, risk factors, predictors

## Hindistan'da üniversite öğrencileri arasında yaygınlık, öngörücüler, internet bağımlılığının psikolojik bağıntıları: Kapsamlı bir çalışma

### Öz

**Amaç:** Bilgi teknolojisi çağında, internet kullanmak kaçınılmazdır. İnternet kullanımını aşırı olduğunda olumsuz etkileri görülür. Bu çalışmanın amacı, Hindistan'da üniversite öğrencileri arasında internet bağımlılığının (IBa) yaygınlığını, belirleyicilerini ve ruhsal bağıntılarını belirlemektir. **Yöntem:** Bu çalışma, Hindistan'da üniversite öğrencilerinin büyük bir örnekleminde IBa yaygınlığını, IA'nın ruhsal bağıntılarını ve IBa'nın belirleyicilerini değerlendirerek bulguları sentezlemeyi amaçladı. Ocak 2016-Nisan 2017 arasında, rastgele seçilen 1600 üniversite öğrencisine kapsamlı bir anket uygulandı: İnternet Bağımlılığı Testi, Beck Depresyon Ölçeği, Beck Anksiyete Ölçeği ve Barratt Dürtüsellik Ölçeği kullanıldı. **Bulgular:** İnternet bağımlısı (IB) olan ve internet bağımlısı olmayan (IBD) grupların klinik özelliklerinin karşılaştırılması, IA, depresyon, anksiyete ve dürtüsellik puanlarının IB'de IBD grubundan anlamlı derecede yüksek olduğunu gösterdi. **Tartışma:** Büyük bir üniversite öğrencisi örneği ile ilgili yapılan kapsamlı bir anket, Hindistan'da IBa'nın yaygınlığının %12.5 oranında olduğunu göstermiştir. Depresyon, anksiyete ve dürtüsellik ölçümleri, IB grubu ile IBD grubuna göre anlamlı olarak ilişkilidir. Bu çalışma, internet kullanımının aşırı kullanımını-

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*la bağlantılı riskin ciddi bir şekilde ortaya çıktığını ortaya koydu, dolayısıyla erken tanı ve önleme müdahalelerinin uygulanması ruh sağlığı uzmanlarının sorumluluğundadır. (Anadolu Psikiyatri Derg 2020; 21(2):117-123)*

**Anahtar sözcükler:** İnternet bağımlılığı, yaygınlık, ruhsal bağıntı, risk etkeni, belirleyiciler

## INTRODUCTION

The Internet has enriched our life however for many, internet use can grow into a problem. people may find themselves online shopping, gaming, social networking, site surfing, blogging, stock trading, gambling, viewing pornography to an extent that it interferes with their ability to keep up with school, relationship and work and or has a negative effect on their mood. The term Internet Addiction (IA) was proposed by Goldberg for pathological compulsive internet use.<sup>1</sup> K. Young was first to publicize the case report on IA.<sup>2</sup> The diagnostic criteria for IA have been proposed by several investigators<sup>3-5</sup> but none of these has achieved a global consensus. Recently, the American Psychiatric Association published the updated version of the DSM and included Internet Gaming Disorder in Section III as a condition requiring further research which is expected to help establish a globally approved definition and diagnostic guidelines for IA.<sup>6</sup>

IA is an upcoming and less researched entity in psychiatry especially in low and middle-income countries, one of them is India. First such effort to study IA among Indian school students was done in Ahmadabad, Gujarat. The result shows 11.8% of student had IA which was predicted by time spent online, usage of social networking sites and chat rooms. This study also found out the strong positive relationship between IA and depression, anxiety and stress.<sup>7</sup> A research conducted in the National Institute of Mental Health and Neuroscience, Department of psychology which focused on identifying the pattern of IA and its association with a mental health problem. Survey analysis found that 24.6% reported frequent problems due to internet use and also have loneliness, depressed mood, compulsivity and other psychological impairment.<sup>8</sup>

A research confirmed that those addicted to the internet showed the depressive symptoms which they claimed to be caused by poor self-esteem and subsequent fears of rejection by others. These individuals tend to increase their internet use whenever their demands are met by the internet without having to face the real world.<sup>9</sup> Another study reported that students with low self-esteem and high depression tend to get addicted to the internet.<sup>10</sup> Several studies have demonstrated the association between depres-

sion and IA.<sup>11,12</sup> On one hand, loneliness, low self-esteem, and lack of motivation may drive a depressed individual to net addiction while at the other end, IA may serve as an easy means of getting social approval and thus improving otherwise low self-esteem in such subjects.<sup>13</sup> In the latest study, results revealed a positive correlation between anxiety and IA among students.<sup>14</sup> Persons with social anxiety feel a greater sense of control in online rather than offline interactions. Also, the perception of having a high likelihood of threat in face-to-face interactions leads to IA among persons with high social anxiety.<sup>15</sup> One of the studies assessed relationship between impulsivity and IA among Chinese adolescents which suggested that IAD exhibit more impulsivity than n-IAD and have a various co-morbid psychiatric disorder which could be associated with the psychopathology of IA.<sup>16</sup>

In the present study, we estimated the prevalence of IA, psychological correlates and risk factors that are associated with IA. This study, in which a large number of participants were included and a random sampling method was employed, is expected to provide reliable data on the characteristics of IA in college students of the various discipline of India.

## METHODS

### Participants and response rate

This study was part of a large-scale extensive survey that was carried out across the different stream (Medical, Engineering, Management, Arts/Humanities and Science) in the region of India during the time period of January 2016 to April 2017. The study included 1600 college students aged 18-24 years who completed questionnaire comprised of questions regarding the pattern of general internet usage, depression, anxiety and impulsivity. Around 2000 questionnaires were distributed, Out of which 1740 students (87%) returned filled questionnaire. After omitting 140 submitted forms as they were incomplete and invalid, a total of 1600 (80%) sample was considered final for further assessments.

### Measures

**Internet Addiction Test (IAT):** IAT is developed by K. Young in 1988, is a 20 items questionnaire based on a 5 points Likert scale. The psycho-

metric properties of the IAT showed that it's a reliable and valid measure (Cronbach's  $\alpha=0.76$ ) that has been used in various researches on IA.<sup>17</sup>

**Beck Anxiety Inventory (BAI):** BAI is developed by A.T. Beck which consisted of 21 items rated from 0 to 3 by the test taker with the total possible score of 63 points which further categorized in low, moderate and high anxiety. Internal consistency for the BAI is 0.92 and test-retest reliability (1 week) is 0.75.<sup>18</sup>

**Beck Depression Inventory (BDI):** BDI is a commonly used instrument for quantifying levels of depression. It's developed by A.T. Beck, 21 items self-report inventory using a 4 point scale ranges from 0 (symptom not present) to 3 (symptom very intense). BDI is having high construct validity (0.92), concurrent validity (0.77), test-retest reliability (0.93) and internal consistency (0.91).

**Barratt Impulsiveness Scale-11 (BIS-11):** BIS-11 was designed by Barratt and colleagues to assess the impulsiveness which is akin to personality traits of extraversion and sensation seeking. It consisted of 30 items to yield scores on three factors (attention, motor and planning impulses). The internal consistency for BIS-11 ranges from 0.79 to 0.83 for separate populations of undergraduates, substance abuse patients, and general psychiatric patient and prison inmates.

### Procedure

The participants in the research study were randomly selected. The first step was a selection of various colleges and discipline from India. The consent was sought from the administration and ethical research committee of the respective college before conducting the study. The principal of each selected college was sent a letter requesting their cooperation in the study, along with questionnaires equal to the number of students willing to participate. After obtaining consent from participants, all questionnaires were distributed to the participants in a classroom setting. After the prescribed time, questionnaires were collected from participants and undergone screening for identification of IA, anxiety, depression and impulsivity. The IBM SPSS version 24.0 was used for statistical analysis.

### RESULTS

Randomly selected data of 1600 sample of

college students. (Table 1) comprised of 34% of students were from 18 year age, 47% are from the engineering discipline, 36% of students are studying in the first year, 59% of students were hailed from urban area, 58.2% of staying in hostel/paying guest accommodation and 54% of students are living with nuclear family.

The study group is divided into two categories, internet addicts (IAD) and non-internet addicts (n-IAD) for analysis purpose. (Table 2) The mean score of IA is  $60.71 \pm 8.69$  for IAD and  $32.60 \pm 9.17$  for n-IAD group. Similarly, mean scores for depression (IAD= $27.31 \pm 7.35$ ; n-IAD= $14.20 \pm 9.70$ ) anxiety (IAD= $33.69 \pm 5.63$ ; n-IAD= $17.17 \pm 13.14$ ) and impulsivity (IAD= $80.87 \pm 9.86$ ; n-IAD= $45.22 \pm 23.69$ ) is higher in IAD than the n-IAD group.

The internal consistency was measured using Cronbach's alpha value. George and Mallery provided the following rules of thumb for alpha coefficient:  $>0.9$  excellent,  $>0.8$  good,  $>0.7$  acceptable,  $>0.6$  questionable,  $>0.5$  poor and  $<0.5$  unacceptable.<sup>19</sup> Alpha coefficient value for IA,

**Table 1.** Sociodemographic characteristics of participants

Sociodemographic variables	n	%
Gender		
Male	800	50.0
Female	800	50.0
Age		
18 years	544	34.0
19 years	404	25.3
20 years	368	23.0
21 years	240	15.0
22 years	28	1.8
23 years	12	0.8
24 years	4	0.3
Education		
Medical	368	23.0
Engineering	752	47.0
Management	152	9.5
Arts & humanities	124	7.8
Science	204	12.8
Habitat		
Rural	572	35.8
Urban	944	59.0
Semi-urban	84	5.3
Place of stay		
Residence	668	41.8
Hostel, paying guest, etc.	932	58.2
Type of family		
Nuclear	864	54.0
Joint	736	46.0

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**Table 2.** Clinical characteristics of study variables

Variables	Internet addicts Mean±SD	Non-internet addicts Mean±SD	α						t	p	
				1	2	3	4	5			
1 Internet addiction	60.71±8.69	32.60±9.17	0.79	1						27.59	<0.001
2 Depression	27.31±7.35	14.20±9.70	0.92	0.69**	1					14.45	<0.001
3 Anxiety	33.69±5.63	17.17±13.15	0.94	0.69**	0.66**	1				17.55	<0.001
4 Planning impulse	31.25±6.09	21.57±7.49	0.91	0.69**	0.66**	0.79**	1			13.23	<0.001
5 Motor impulse	27.13±5.80	15.37±9.18	0.87	0.63**	0.55**	0.82**	0.75**	1		15.18	<0.001
6 Attention impulse	22.49±3.20	8.27±9.41	0.90	0.46**	0.56**	0.34**	0.42**	0.11*		22.53	<0.001

\*:  $p < 0.05$ ; \*\*:  $p < 0.001$

**Table 3.** Prevalence of IA among participants

IAT Score	Prevalence criteria	Gender wise distribution		Discipline wise distribution					Total	Percent
		M	F	Med	Eng	Man	Art	Sci		
80-100 points	Severe internet user	11	6	2	7	4	1	3	17	1.06
50-79 points	Frequent internet user	98	85	29	81	24	19	30	183	11.43
<49 points	Average internet user	691	709	337	664	124	104	171	1400	87.50

IAT-Internet Addiction Test; M: Male; F: Female; Med: Medical; Eng: Engineering; Man: Management; Art: Humanities & Social Science; Sci: Science

**Table 4.** Pattern and risk factor of IA among participants

Risk factors	Gender wise comparison		Category wise comparison	
	$\chi^2$	p	$\chi^2$	p
Time spent per day	15.05	<b>0.005</b>	39.03	<b>0.001</b>
Amount spent per month	15.76	<b>0.003</b>	28.24	<b>0.001</b>
Sources of Internet	5.68	0.225	13.63	0.092
Appliance for internet	5.97	0.201	19.28	<b>0.013</b>
App download mostly	8.63	0.071	30.73	<b>0.001</b>
Online pornography	17.65	<b>0.003</b>	13.56	0.194
Online gaming	7.84	0.098	23.11	<b>0.003</b>
Online gambling	3.01	0.556	19.69	<b>0.012</b>
Online chatting	14.10	<b>0.007</b>	21.56	<b>0.006</b>
Online shopping	5.58	0.233	27.22	<b>0.001</b>
Watching YouTube videos	8.04	0.090	14.53	0.069
Suspicion from parents	8.29	0.082	19.25	<b>0.014</b>
Decline in Academic grades	6.17	0.188	20.27	<b>0.009</b>
Neglect others	9.53	<b>0.049</b>	29.22	<b>0.001</b>
IMA checking often	2.29	0.683	43.72	<b>0.001</b>
Emails checking often	8.64	0.071	23.39	<b>0.003</b>
Checking SNS	2.46	0.651	24.21	<b>0.002</b>
Physical health issue	4.61	0.330	30.01	<b>0.001</b>
Psychological health issue	14.95	<b>0.005</b>	47.85	<b>0.001</b>
Aggressive behavior	3.77	0.437	47.80	<b>0.001</b>

IMA: Instant Messaging App; SNS: Social Networking Sites

anxiety, depression and impulsivity are 0.79, 0.94, 0.92 and 0.93 respectively. Internal consistency for all the instruments used in a re-

search study falls within the cut off limits which shows all the measures are having good reliability for our research dataset.

In IAD group, IA were significantly correlated with depression ( $r=0.693$ ;  $p<0.001$ ), anxiety ( $r=0.691$ ;  $p<0.001$ ), planning impulsivity ( $r=0.687$ ;  $p<0.001$ ), motor impulsivity ( $r=0.625$ ;  $p<0.001$ ) and attention impulsivity ( $r=0.457$ ;  $p<0.001$ ). However, there was a weak negative relationship between IA and depression ( $r=-0.054$ ;  $p<0.001$ ), anxiety ( $r=-0.008$ ;  $p<0.001$ ), planning impulsivity ( $r=0.005$ ;  $p<0.001$ ), motor impulsivity ( $r=0.035$ ;  $p<0.001$ ) and attention impulsivity ( $r=-0.004$ ;  $p<0.001$ ) in n-IAD group.

A comparison of the clinical characteristics of the IAD and n-IAD groups showed that the score on IA ( $t_{(398)}=27.60$ ,  $p<0.001$ ), depression ( $t_{(250.93)}=14.45$ ,  $p<0.001$ ), anxiety ( $t_{(390.14)}=17.555$ ,  $p<0.001$ ) and impulsivity ( $t_{(392.99)}=21.22$ ,  $p<0.001$ ) were significantly higher in the IAD than in the n-IAD group.

The prevalence of IA, according to IAT scores of

$\geq 50$  points, among the college students of India was 200 (12.5%) (Table 3). While 183 (11.43%) of the students were experiencing frequent problems because of the internet, internet usage was causing severe problems in the lives of 17 (1.06%) of them.

Chi-square test was performed to investigate factors associated with IA. A summary of the significant risk factors has been shown in Table 4. Gender, time spent per day, money spent on internet per month, online pornography, online chatting, decreased interaction with parents/friends/relatives/neighbors were potential risk factors ( $p<0.05$ ), whereas sources of internet (Dongal, LAN, Sim card, WiFi), appliances for internet use (Smartphone, Laptop, Tablet, Desktop), smartphone apps, frequent checking e-mail, online gambling were not found to be significantly influential factors.

**Table 5.** Predictors of IA among participants

Variables	$\beta$	Se	Sig. (2-tailed)	Lower	Upper
Depression	-0.011	0.064	0.856	-0.146	0.101
Anxiety	-0.045	0.034	0.141	-0.116	0.019
Planning impulse	-0.252	0.090	0.002	-0.446	-0.101
Motor impulse	0.439	0.098	<0.001	0.296	0.694
Attention impulse	-0.713	0.166	<0.001	-1.110	-0.462
Gender	0.47	0.240	0.050		
Age	0.46	0.172	0.007		
Education	0.22	0.095	0.019		
Year of study	-0.62	0.201	0.002		
Habitat	0.628	0.225	0.005		
Place of stay	0.132	0.259	0.609		
Family structure	-0.301	0.241	0.211		
Father occupation	-0.146	0.094	0.119		
Mother occupation	0.045	0.093	0.630		

Binary logistic regression analysis was performed (Table 5) to find out the most influential demographic predictors affecting IA by using the enter technique. These were male gender, adolescence age, studying in a technical discipline, initial years of academics and living in an urban area have been increasing the risk for IA whereas staying in a hostel, nuclear family structure and parent's occupation is not significantly predicting proneness to get into IA.

## DISCUSSION

Although there are numerous studies done worldwide to see the growth and impact of IA,

unfortunately, India is lagging behind in conducting large-scale epidemiological studies to establish its diagnostic credibility in the Indian context. In the dearth of nationally representative studies, our study aimed at bridging the gap between the global prevalence of IA and its applicability in the current Indian scenario.

The present study was conducted on 1600 college students with the mean age of 20.1 years in India. In this study, we investigated the prevalence and risk factors of IA alongside we associated and compared psychopathological variables with IA. Cumulatively 12.5% of students are prevalently addicted to the internet,

which was in accordance with previous studies.<sup>7</sup> Across the various field of study, engineering students (44%) are prone to IA followed by science discipline (16.5%) which shows that the internet is being more used by technical discipline students due to requisite of electronically scientific resources.<sup>20</sup> Although medical students are also reaching the threshold of severity even though being in a non-technical discipline.<sup>21,22</sup> There are high number of male students falling in severe internet use category than female which shows that male is more prone to IA compared to female<sup>23,24</sup> but contrary to this female is high in category of frequent internet use than male which is showing female is also in high verge of getting addicted to the internet which is depicted in the results of our study. It's noted that male is significantly different than a female with respect to preferred activities over the internet. Male are indulging in intimacy over the internet, forming new relationships frequently and getting into violent behavior if someone disturbs while online whereas female are neglecting household activities, concealing online sessions and declining in study routines.

The pattern of internet use was varied across risk factors. Results found that IAD group spending 5-6 hours a day on the internet, 300-500 Rs. monthly expenditure on an internet connection, indulging in social networking sites, spending >3 hrs in watching porn videos, checking instant messaging apps on every notification and checking e-mails every one hour. Contrary to that, n-IAD group is using the internet for <1 hour, spending <100 Rs. monthly expenses, watching porn video for <30 minutes and checking Instant messaging apps once a day. The difference between both groups is significant at  $p > 0.01$ . In our results, it's depicted that IA is not justified a separate entity but undoubtedly bundled with psychiatric comorbidity.<sup>25</sup> IA is significantly correlated with depression,<sup>26</sup> anxiety<sup>14</sup>

and impulsivity<sup>15,27</sup> in IAD than its N-IAD counterpart.

However, this study has several limitations. The study was restricted to the age group of 18-24 years. Future studies suggested conducting a robust comparison of different age groups to investigate the prevalence and determinants of IA. We have only included self-report measures in this study hence there is the possibility of differences in prevalence found in this study and actual prevalence, therefore, future studies can extend work by using different methods of data collection like structured interview technique, observation, case reports etc. The study is limited to parts of India, therefore, other parts of India should also cover to have a broad generalization.

## CONCLUSION

IA has been thought to be a public health issue but little studies have been done to establish its prevalence and treatment options. The current study conducted in a large number of students in India aimed at revealing the propensity of IA. The results showed that 12.5 % of students are facing serious physical and mental health issues due to internet overuse in India, which is quite high. It concluded that there is a significant correlation between anxiety, depression, and impulsivity in the IAD group compared to n-IAD group. In order to fight with such a behavioural addiction, Psychological interventions like, cognitive behavioural therapy, family therapy and pharmacological approaches have found to be potentially effective treatments. Spreading awareness via psycho-education to the public, policymakers, teachers, parents and students with regard to IA and its health hazard as well as planning and execution of precautionary actions are needed urgently in India.

**Authors' contributions:** S.S.B.: Conceptualization, data collection, formal analysis, writing-original draft; Y.D.: funding acquisition, supervision, writing-review and editing.

## REFERENCES

1. Goldberg I. *Internet addiction disorder*. Retrieved November. 1996; 24:2004.
2. Young KS. *Psychology of computer use: XL. Addictive use of the Internet: a case that breaks the stereotype*. *Psychol Rep* 1996; 79(3):899-902.
3. Shapira AN, Lessig MC, Goldsmith TD, Szabo ST, Lazoritz M, Gold MS, et al. *Problematic internet use: Proposed classification and diagnostic criteria*. *Depression and Anxiety* 2003;17(4):207-216.
4. Ko CH, Yen JY, Chen CC, Chen SH, Yen CF. *Proposed diagnostic criteria of Internet addiction for adolescents*. *J Nerv Ment Dis* 2005; 193(11):728-733.

5. Tao R, Huang X, Wang J, Zhang H, Zhang Y, Li M. Proposed diagnostic criteria for internet addiction. *Addiction* 2010; 105(3):556-564.
6. American Psychiatric Association. *Diagnostic and Statistical Manual of Mental Disorders (DSM-5®)*. Arlington: American Psychiatric Pub., 2013.
7. Yadav P, Banwari G, Parmar C, Maniar R. Internet addiction and its correlates among high school students: A preliminary study from Ahmedabad, India. *Asian J Psychiatr* 2013; 6(6):500-505.
8. Barthakur M, Sharma MK. Internet addiction and mental health problems. *Asian J Psychiatr* 2012; 5(3):279-280.
9. Morgan C, Cotten SR. The relationship between Internet activities and depressive symptoms in a sample of college freshmen. *CyberPsychology & Behavior* 2003; 6(2):133-142.
10. Bahrainian A, Khazaee A. Internet addiction among students: the relation of self-esteem and depression. *Bulletin of Environment, Pharmacology and Life Sciences* 2014; 3(3):1-6.
11. Ko CH, Yen JY, Yen CF, Chen CS, Chen CC. The association between internet addiction and psychiatric disorder: a review of the literature. *Eur Psychiatry* 2012; 27(1):1-8.
12. Fisher DR, Boekkooi M. Mobilizing Friends and Strangers: Understanding the role of the Internet in the Step it Up day of action. *Information, Communication & Society* 2010; 13(2):193-208.
13. Wartberg L, Sack PM, Petersen KU, Thomasius R. Psychopathology and achievement motivation in adolescents with pathological internet use. *Prax Kinderpsychol Kinderpsychiatr* 2011; 60(9):719-734.
14. Azher M, Khan RB, Salim M, Bilal M, Hussain A, Haseeb M. The relationship between internet addiction and anxiety among students of University of Sargodha. *Int J Humanit Soc Sci* 2014; 4(1):288-293.
15. Cao F, Su L, Liu T, Gao X. The relationship between impulsivity and internet addiction in a sample of Chinese adolescents. *Eur Psychiatry* 2007; 22(7):466-471.
16. Campbell AJ, Cumming SR, Hughes I. Internet use by the socially fearful: Addiction or therapy? *CyberPsychology & Behavior* 2006; 9(1):69-81.
17. Widyanto L, McMurrin M. The psychometric properties of the internet addiction test. *Cyberpsychology & Behavior* 2004; 7(4):443-450.
18. Beck AT, Epstein N, Brown G, Steer RA. An inventory for measuring clinical anxiety: psychometric properties. *J Consult Clin Psychol* 1988; 56(6):893.
19. Mallery P, George D. *SPSS for Windows Step by Step: A Simple Guide and Reference*. Boston: Allyn, Bacon, 2003.
20. Jones S. *Internet Goes to College: How Students Are Living in the Future with Today's Technology*. Diane Publishing, 2008.
21. Ghamari F, Mohammadbeigi A, Mohammadsalehi N, Hashiani AA. Internet addiction and modeling its risk factors in medical students, Iran. *Indian J Psychol Med* 2011; 33(2):158.
22. Salehi M, Khalili MN, Hojjat SK, Salehi M, Danesh A. Prevalence of internet addiction and associated factors among medical students from Mashhad, Iran in 2013. *Iran Red Crescent Med J* 2014; 16(5):e17256. doi: 10.5812/ircmj.17256.
23. Bisen S, Deshpande Y. An analytical study of smartphone addiction among engineering students: a gender differences. *The International Journal of Indian Psychology* 2016; 4(1):70-83.
24. Durkee T, Kaess M, Carli V, Parzer P, Wasserman C, Floderus B, et al. Prevalence of pathological internet use among adolescents in Europe: demographic and social factors. *Addiction* 2012; 107(12):2210-2222.
25. Bisen SS, Deshpande YM. Understanding internet addiction: a comprehensive review. *Mental Health Review Journal* 2018; 23(3):165-184.
26. Kim K, Ryu E, Chon MY, Yeun EJ, Choi SY, Seo JS, et al. Internet addiction in Korean adolescents and its relation to depression and suicidal ideation: a questionnaire survey. *International journal of nursing studies*. 2006; 43(2):185-192.
27. Lee HW, Choi JS, Shin YC, Lee JY, Jung HY, Kwon JS. Impulsivity in internet addiction: a comparison with pathological gambling. *Cyberpsychol Behav Soc Netw* 2012; 15(7):373-377.